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# COMPUTER-BASED NETWORK PRINTING SYSTEM AND METHOD

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to a computer-based network printing method and system, which enables printing from a printer connected, directly or indirectly, in a network system to a host computer, terminal computers and other printers.

### 2. Description of the Related Art

Computer networks and printers that connect to the network are not new. These network print systems include a host computer, terminal computers and printers, all of which are interconnected by way of a computer communications network. The host computer manages the terminal computers that are used by respective network users. The users are able to access various printers because the printers are connected to the network and are thus, common network resources. There are various places where the printers may be located. For example, all printers may be located in the same place, different places in one building, or distributed throughout different buildings.

As recognized by the present inventor, conventional network print systems have problems. For example, a user must select one of the network printers as a prerequisite for printing. Therefore, the print output is directed to the selected printer and not another one of the available printers. Security is another problem. Conventional network printing systems have a number of users with a number of printers, where the printed output of the respective printers are available for inspection by other users. Moreover, suppose a user prints a confidential documents on a selected printer, which is connected to a network system, other user can observe, or extract, the contents of the printed document (inadvertently, or intentionally).

Japanese patent document, JLOP 4-48323 shows a print server, which has a stacker for stacking printed documents. In this print server, the stacker has a feature that allows the user to take the printed documents only when the user inputs a correct password. Thus, the only the user who has the proper password privilege can observe or extract the printed document.

However, in this conventional print server, the user can only retrieve the printed document from the selected printer, and therefore, cannot retrieve the document from another printer. Attempting to designate multiple or all printers for printing the document gives rise to a security problem.

## SUMMARY OF THE INVENTION

Accordingly, an object of the present invention is to provide a novel computer-based network printing method and system which obviates the above-mentioned problems. A computer-based network print method and system according to the present invention enables a user to print documents from any printer connected to the system.

For that purpose, the present invention includes a printer having an operation unit and a host computer. The host computer receives image data to be printed send by a user by way of a terminal computer. The host computer stores the image data with a unique job number, sends the job number to the terminal computer and this terminal computer displays the job number to the user. The user may then enter the displayed job number on an operation unit of any printer selected by the user, and in response, the host computer

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downloads the stored image data associated with the inputted job number to the selected printer and the selected printer prints the document.

Furthermore, other users are prevented from breaching the confidentiality of the printed document because only the intended recipient (i.e., the user who originated print job) knows the user's password and job number and because the intended recipient is located at the printer and can "guard" the printed document from being viewed by other people. To this end, in this invention, a host computer or printer stores the password inputted by a user, and for printing, when the stored password and an inputted password match, documents are printed from the printer on which the user inputs the job number and password.

## BRIEF DESCRIPTION OF THE DRAWINGS

A more complete appreciation of the invention and many of the attendant advantages thereof will be readily obtained as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings, wherein:

FIG. 1 is a block diagram of a network system using a network print system according to present invention;

FIG. 2 is a diagram of each block in FIG. 1 and an interface between each block; and

FIG. 3 is a flowchart of an operation of this network system including user operations for the computer and the printer.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views FIG. 1 is a block diagram of a computer-based network using a computer-based network print system according to present invention. As illustrated the computer-based network system includes four computers for four users, two network servers, four printers, two print servers and one host computer. Of course other configurations are possible as well. In FIG. 1 two computers (101-102, and 103-104) are connected to each network servers 105 and 106. In turn, the two network servers 105 and 106 are connected to a host computer 113, which controls the entire network. The network servers 105 and 106 and the host computer 113 communicate with each other by a bus.

Also shown in FIG. 1 are two printer pairs (107-108, and 109-110) respectively connected to print servers 111 and 112. The two print servers 111 and 112 are connected to the host computer 113. The print servers 111 and 112 control printing according to authorization commands from the host computer 113, and the printers 107, 108, 109 and 110 work according under the control of the printer servers 111 and 112.

In this network system, four users (Users A-D, as identified in FIG. 1) send print information, in the form of image data, text data and so on, to the host computer 113 by way of the network servers 105 and 106. Furthermore, each of the four users have complete control over which of the four printers 107, 108, 109 and 110, the user would like to effect the print operation. Control over selecting the printer is carried out by the user, who, by entering on a keypad of the desired printer, the user's password and print job number. Alternatively, the user may simply enter the job number, if no passwords are required.